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Ether-FSH2400NS

Smart Fast Ethernet Switch

Windows In-Band Management
24 × 10/100Base-TX ports
Auto MDI/MDI-X
VLAN, Priority, Bandwidth Control
Trunking, Loop Detection

User's Manual

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FCC Warning

This equipment has been tested and found to comply with the requirements for a Class A digital device, pursuant to Part 15 of the FCC Rules. These requirements are designed for reasonable protection against harmful interference when the equipment operating in a commercial environment. This equipment can generate and radiate electromagnetic energy and, if not installed and used in accordance with this guide, may cause significant interference with radio communication. Operation of this equipment in a residential area is likely to cause interference to household appliances, in which case the user will be required to amend at his or her own expense.

CE Mark Warning

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate preventive measures.

Disclaimer

Contents in this manual are subject to changes without prior notice.

About this *User's Manual*

This ***User's Manual*** aims at helping users to know the key features of **Ether-FSH2400NS Fast Ethernet Switch** and to install it in a **10/100BASE-TX Fast Ethernet Local Area Network (LAN)**.

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1 Product Overview

Introduction

Windows Remote Management software

Conventionally, configuring a switch's smart management will require users to attach the computer (serial or printer port) directly to the switch's console port. With Ether-FSH2400NS's in-band management capability, users can configure the switch through the Ethernet network. The included Windows management software provides a very simple point-and-click interface to set all the functions. Users can even backup settings to be restored in the future. Best of all, the management utility can configure several switches using the same utility.

Management Features

The Ether-FSH2400NS is equipped with many practical management functions.

Per-port bandwidth control

- allow limiting the outgoing and incoming bandwidth separately for each port .

Central Switch management:

- Configure several switches at the same time.

VLAN filter

- provide controls to let single-cast, multi-cast, or broadcast traffic to pass between VLANs.

Quality of Service

- for multimedia applications: the 802.1p compliance provide priority traffic management based on port, vlan-tag, or TCP/IP Differserv information.

Link aggregation

- The LACP(Link Aggregation Control Protocol) increase the uplink speed by allowing several ports(Trunk Group) to link between the switches. The switch allows up to 7 trunk groups in 2 or 4 ports. Please make sure that switches on both side are setup for the trunking function.

IGMP Snooping

- for IP multicast group management

Broadcast Storm control

- prevents the broadcast traffic from overflowing the network.

Loop detection

- alert the user when there is a loop formed inside the network on the front panel LED.
- The management software's diagnostic function even report which ports the loop occurs.

Port setting

- setting port speed and duplex mode, flow control

Authentication Keys

- The switch support authentication key feature for the management function. This will prevent unauthorized users from changing the switch's settings.

For Detail information on management functions, please refer to Chapter 5 "Management Software Guide".

In-Band and Out-of-Band Management

In-Band and Out-of-Band managements are the two distinct methods for switch management.

In-Band management that includes WinSmart, Web, Telnet, and SNMP allows users to configure the switch through the Ethernet network.

Out-of-Band management means managing the switch outside of the switch's Ethernet network. Console Port management is the most common type of out-of-band management. Out-of-Band management requires the switch to be physically attached to a computer through a RS-232, USB, or Parallel port.

The Ether-FSH2400NS is equipped with WinSmart In-band management. It uses the unique RRCP protocol that enables the included Windows utility to manage the switch inside the LAN. However; since it does not use IP protocol, it cannot be managed remotely from the Internet.

What is VLAN?

Defining VLAN

What is VLAN? Since VLAN solutions and implementations are still very vendor-specific, to define precisely what VLANs will certainly arouse controversy. Nevertheless, most would agree that a VLAN can roughly be equated as a broadcast domain. More specifically, VLANs can be seen as a group of end stations, perhaps on multiple physical LAN segments, which are not constrained by their physical location and can communicate as if they were on a common LAN.

There are several ways to define VLAN membership: port grouping, frame tagging, MAC-layer grouping, network-layer grouping, IP multicast grouping, etc. **Ether-FSH2400NS** utilizes port-grouping (port-based VLAN) for the implementation of VLAN in your network.

Port-based VLAN

Ether-FSH2400NS Fast Ethernet Switch fulfills the initial VLAN implementation as defining VLAN membership by groups of switch ports. Port grouping is the most common method of defining VLAN membership, and its configuration is straightforward. But, when a user moves from one port to another, it takes a network manager to manually reconfigure VLAN membership.

With manual VLAN configuration, both the initial setup and all subsequent moves and changes are controlled by the network administrator, enabling a high degree of control. Also moving users manually with VLANs may actually be easier than moving users across router subnets.

Table Maintenance via Signaling

When an end-station broadcasts its first frame, the switch resolves the end-station's attached port with its VLAN membership in cached address tables. As VLAN membership changes, these address tables can be manually updated by a system administrator at a management console.

What is Priority Queuing?

Priority Queuing is a method of ensuring that high priority traffic gets delivered efficiently, even when during bursts of high traffic load. In this way, traffic such as voice data and video (services which are streaming) are prioritized, helping steady picture and sound quality.

Ether-FSH2400NS allows 2-level (*High/Normal*) Priority setting by any of the three types of *priority frames operations*: **TCP/IP TOS** or **per Port *priority frame operation***.

The QoS setting for priority *per port* means that all packets received by the port will be priority frames; **Ether-FSH2400NS** can also judge the priority of frames by checking the specific bits of r *TCP/IP TOS/DS* included in the frame format. **Ether-FSH2400NS** will judge the priority of frames by checking the specific bits recorded in the type field of packet format to ensure the VLAN or TCP/IP TOS/DS status of packets, then set the threshold of VLAN or TCP/IP TOS/DS to declare the priority of packet.

If you have any plans to implement network telephony or any sort of video conferencing, streaming video/audio or any real-time applications on your network you will need **Ether-FSH2400NS** for priority queuing. Its benefit is to dramatically improve the quality of priority services on the network. If priority queuing is not implemented then the quality of these services will depend entirely on the loads on your network. If network traffic is high, the service will not work properly.

2 Preparation before Installation

Unpack the Package

Before you begin the installation of **Ether-FSH2400NS** Fast Ethernet Switch, make sure that you have all the necessary accessories that come with your package. Follow the steps below to unpack your package contents:

1. Clear out an adequate space to unpack the package carton.
2. Open the package carton and take out the contents carefully.
3. Put back all the shipping materials such as plastic bag, paddings and linings into the package carton and save them for future transport need.

After unpacking and taking out the entire package contents, you should check whether you have got the following items:

- ☒ **Ether-FSH2400NS** Fast Ethernet Switch
- ☒ One AC power cord
- ☒ Rack-mounting kit (screws and mounting brackets)
- ☒ Support CD-ROM (The PDF version of this *User's Manual* can be found within)

If any of these above items is missing or damaged, please contact your local dealer for replacement.

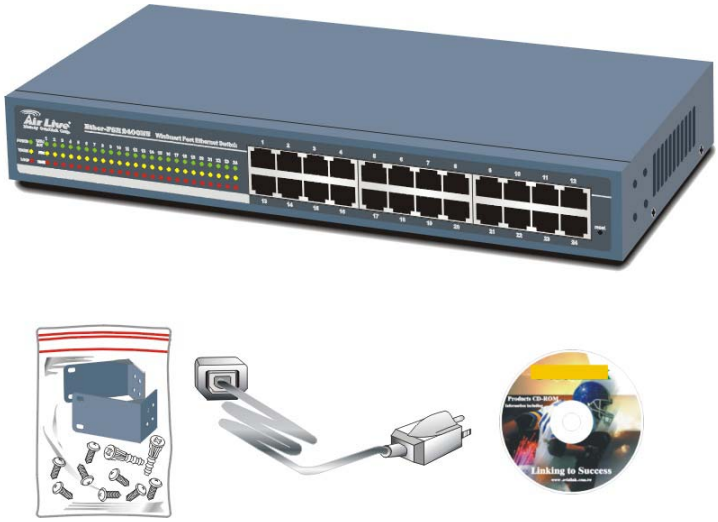


Fig. 2-1 Package Contents

The Front Panel

The front panel is where you can find the twenty-four 10/100Mbps station ports and the LED indicators. For the technical specifications of the ports, please refer to *Appendix A, Product Specifications* for detailed information. For information concerning LED indicators, please refer to *Chapter 4, LED Indicators*.

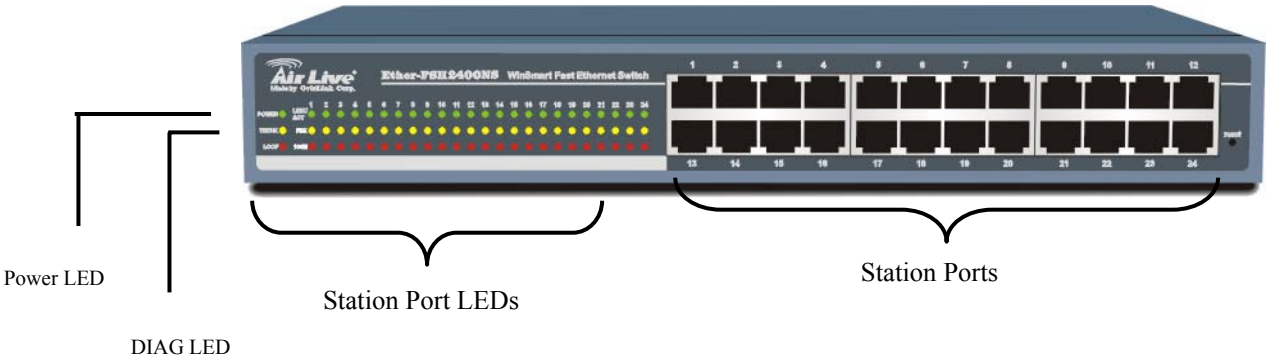


Fig. 2-2 Front Panel

Reset Button

The Ether-FSH2400NS Features a reset button that can restore the switch settings back to factory's default value. Please press this button if your management software have problem detecting the switch or if the switch is not functioning correctly. The reset button is located on the right side of the front panel

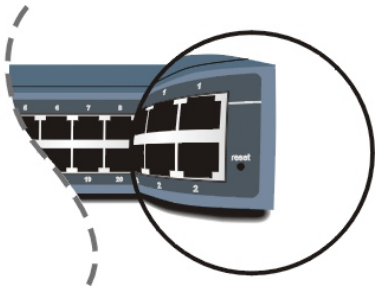


Fig 2-3 The Reset Button

The Rear Panel

The rear panel is where you can locate the power switch and AC power connector.

Power Switch

You can turn the power switch on /off to activate/deactivate the Switch. To turn on the Switch, press the switch to the ON position. To turn off, press the switch to the OFF position.

AC Power Connector

This is a three-pronged power connector where the power cord should be attached. Just plug the female end of the power cord into the connector, and the male end of the power cord into an AC power outlet. The switch supports an input voltages ranging from 100 ~ 240 V_{AC} @ 50~60 Hz .

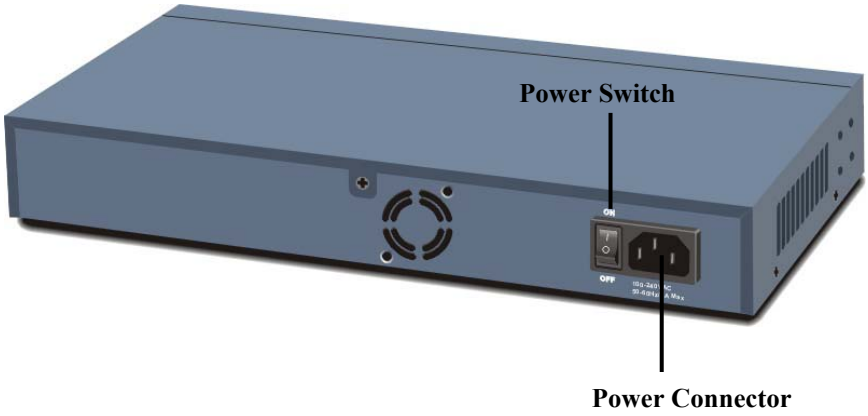


Fig. 2-4 Rear Panel

3 Installation of the Switch

Quick Installation

Ether-FSH2400NS Fast Ethernet Switch is fully compliant with 10/100BASE-TX Fast Ethernet standards.

5 Steps to Quick Installation

Step 1. **Power on the Switch.**

Step 2. **Connect network devices to the Switch:** connect either workstation, server, switch, bridge or router to the station port (10/100BASE-TX), using 100 ohm unshielded twisted pair (category 5 UTP) or shielded twisted-pair (STP) cable.

Step 3. **Install the Management software:** Please refer to chapter 5 for detail instruction on how to install and configure the management software.

Rack Mounting

Ether-FSH2400NS Fast Ethernet Switch can also be mounted on a standard size 19-inch rack, which can in turn be placed in a wiring closet with other equipments.
Before you can mount the switch on the rack, first you must attach the mounting brackets on both sides of the switch with screws, and then mount it as a unit on the rack.

To mount the unit on a rack, please follow the steps below:

Step 1. First, align the holes on the bracket with the holes on both side of the switch.
Step 2. Insert screws into the holes and then fasten the bracket on one side of the switch with a screwdriver.
Step 3. Repeat Step 1 and 2 to fasten the bracket on the other side of the switch.
Step 4. Mount the unit on the rack and align the notches on both brackets with mounting holes on the rack, and then secure the unit with suitable screws.

Fig. 3-1 Fastening the brackets on the switch

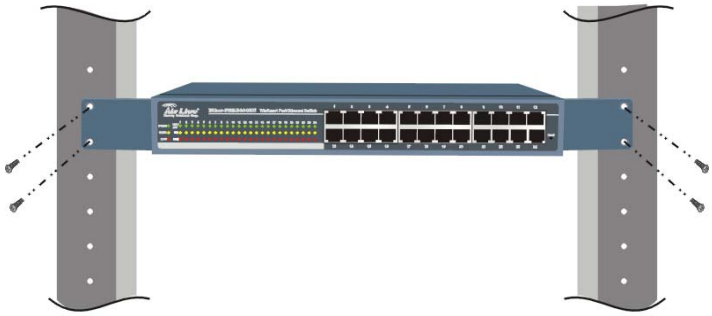


Fig. 3-2 Attaching the Switch to a 19-inch rack

Desktop Installation

Ether-FSH2400NS Fast Ethernet Switch has four rubber pads attached on each corner of its underside. These pads serve as cushionings against vibration and prevent the switch from sliding off its position. They also allow adequate ventilation space when you place the switch on top of another device.

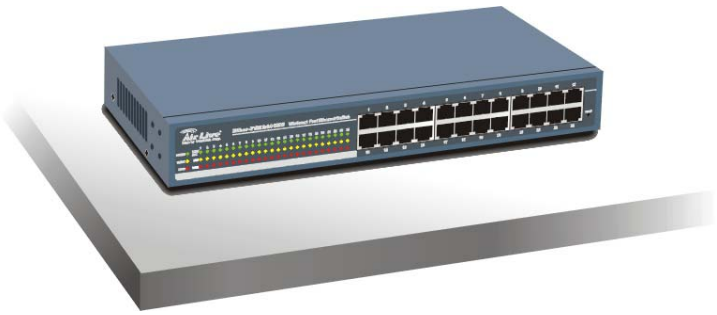


Fig. 3-3 Desktop installation

- The location you choose to install your switch and the way you configure your network may greatly affect its performance.

Installation Site Preparation

You can mount **Ether-FSH2400NS** Fast Ethernet Switch either on desktop or on a 19-inch rack. If you plan to mount the switch on desktop, please choose a steady, level surface in a well-ventilated area that is free from excessive dust. In any case, the installation site chosen for your switch has to comply with the following requirements:

- The surface where you want to mount the switch must be able to sustain at least 2.7 kg.
- Do not place heavy objects on top of the switch.
- The location must preferably be free from excessive dust, away from heat vent, hot-air exhaust and direct sunlight.

- The switch should not be placed near large electric motors or other strong electromagnetic sources. As a reference, the strength of the electromagnetic field on site should not exceed the (RFC) standards for IEC 801-3, Level 2(3V/M) field strength.
- The air temperature in the location should be within a range of 32 to 122 °F (0 to 55°C).
- The relative humidity in the location should not exceed 95% non-condensing humidity.
- The distance between the RJ-45 port and the standard network interface should not exceed 100 meters.
- Adequate space should be allowed in front of all the ports, so that each port is easily accessible for cable connections.

Cabling Guide

For 10/100BASE-TX ports

The 24 RJ-45 station ports require Cat. 5 twisted-pair UTP/STP cable for connection. When configuring within the 10/100BASE-TX cabling architecture, the cable distance should be within 100m.

The following table summarizes the cable requirement for 10/100BASE-TX connection:

10BASE-T	100 ohm Category 3, 4, 5 UTP/STP cable
100BASE-TX	100 ohm Category 5 UTP/STP cable

Auto MDI/MDI-X function

The SNMP-FSH2400NS is equipped with Auto-MDI/MDI-X function, which allows you to use straight-thru cable even when connecting to another switch/hub. Simply use the straight-through cable for all types of 10/100BASE-TX connections, either to a PC or to a networking device such as other hub or switch.

Connection / Specification	10 /100Base-TX Ports
Interface	RJ-45
Cable to Use	
To an end station	Straight-through twisted-pair cable
To a hub/switch	Straight-through twisted-pair cable
Maximum Distance	100 meters

Table 2-2 Cabling type for 10/100BASE-TX

Making your own UTP/STP cable

The twisted-pair cable provided an eight-pin plug at each end that mate with the twisted-pair port on the adapter and with a RJ-45 wall jack. If you are marking your own interface cables to use as dedicated network wiring or as extension cables, please follow the guideline below:

- Each UTP/STP cable contains eight wires in either 568A or 568B color scheme (please see Fig 2-7). The wires are twisted in pairs to reduce cross talk and various signal noises.
- Each pairs composed of one positive wire and one negative wire. The positive are marked by stripe color while the negative are marked by solid color. A pair of wires is composed of one stripe and one solid wire of the same color.
- There are four pairs of wires, they are in group of {1 and 2}, {3 and 6},{4 and 5},{7 and 8}. Please see Fig 2-8 for diagram.
- When making a cable, make sure the correct pairs of wire are twisted together before inserting into the jack. Incorrect twisted pair will cause the cable to malfunction or signal degradation over short distance.
- A straight-thru cable have jacks on both end following the same color scheme.
- A cross-over cable have jacks on both end following the opposite color scheme (one 568A and one 568B)
- While 10/100Base-TX only use the first 2 pairs of wires (1+2, 3+6). However, please still make sure all 4 pairs are twisted and insert into the jack in correct order.

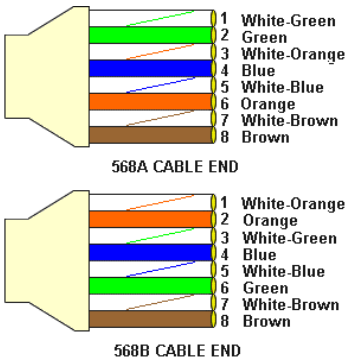


Fig 2-3 Twisted Pair Color Scheme

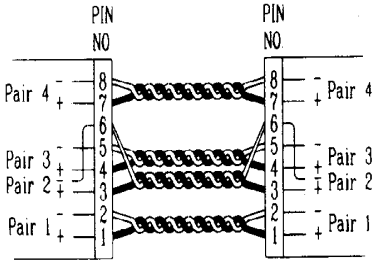


Fig 2-4 Pair Wires

Connecting to Power

Ether-FSH2400NS Fast Ethernet Switch features a universal auto-select power supply unit, which allows a power connection to a wide range of input voltages from 90 to 240V_{AC} @ 50 ~ 60Hz. To establish its power connection, simply plug the female end of the power cord into the power connector on the rear of the switch and the male end of the power cord into a suitable power outlet. Once you have correctly plugged in the power, you can then turn on the Power Switch to activate the switch.

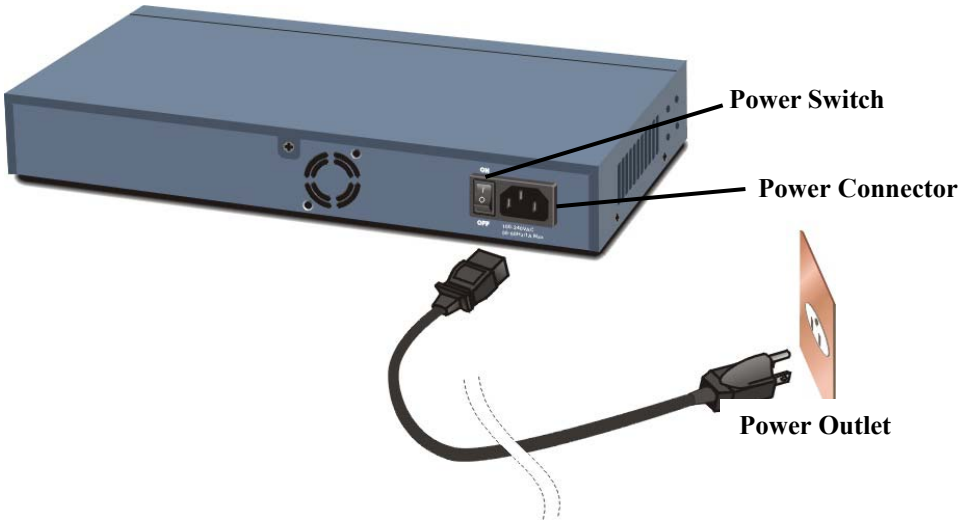
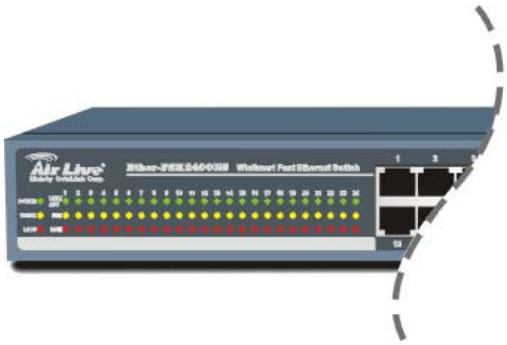


Fig 3-13 Connecting the Switch to power outlet

4 LED Indicators

Before connecting any network device to **Ether-FSH2400NS** Fast Ethernet Switch, you should take a few minutes to look over this chapter and get familiar with the front panel LED indicators of your Switch.



System LEDs

- **Power** (green) to indicate power on/off status
- **Loop** (yellow) to indicate network loop has formed inside the network. You can use the management program's diagnostic function to find out which port the loop occurs. *This function will work only after you enabled the Loop Detection using the Management Utility.*
- **Trunk** (RED) indicate when the Trunking function is enabled using the management utilty

Station Port LEDs

For port 1 ~ port 24

- **Link/Act** (green) to indicate linking status and activity
- **FDX/Col** (yellow) to indicate Full Duplex transmission mode and collision status
- **100 M LED** (red) to indicate 100 Mbps speed

LED Table

LED indicator	Color	Status	Meaning
System LEDs			
Power LED	● Green	ON OFF	Power ON Power OFF
Loop LED	● Yellow	ON OFF	Detect a loop even in the network Loop not detected
Trunk LED	● Yellow	ON Flashing OFF	Trunk link is established Trunk function is turn on but connection is wrong
Station Port LEDs			
Link/Rx	● Green	ON Blinking OFF	Connection is made Transmitting/Receiving No connection is made
FDX/Col	● Yellow	ON Blinking OFF	Full Duplex Collision (*in half duplex*) Half Duplex
100M	● Red	ON OFF	100Mbps speed 10Mbps speed

Table 4-1 System & Station Port LEDs

5 Management Software Guide

Introduction

The Airlive Windows remote management software allows user to configure the management function though the LAN port. It uses a specialized RRCP protocol and does not use the IP protocol. It operates inside the Ethernet network. Comparing to the Ether-FSH2400R, the Ether-FSH2400NS includes a memory management unit (MPU) to allow switch settings be stored inside the flash memory and enable the authentication key function.

Important Information

- WinPCap 3.1 (included in the CD) must be installed before using the management software
- Most of the setting options show up when you ***right click*** on the screen using your mouse.
- Please make sure to press the "Apply" button after changes
- Please make sure to "write to the switch" after change settings
- The Ether-FSH2400NS has a factory reset button on the right side of the front panel. This button will restore switch's setting to factory's default values.
- If your management program can't find the switch, please press the reset button.

Minimum system requirements

To use Remote Management Application, it is necessary that your system include the following components:

Hardware

- Pentium class processor
- 128 MB RAM

Software

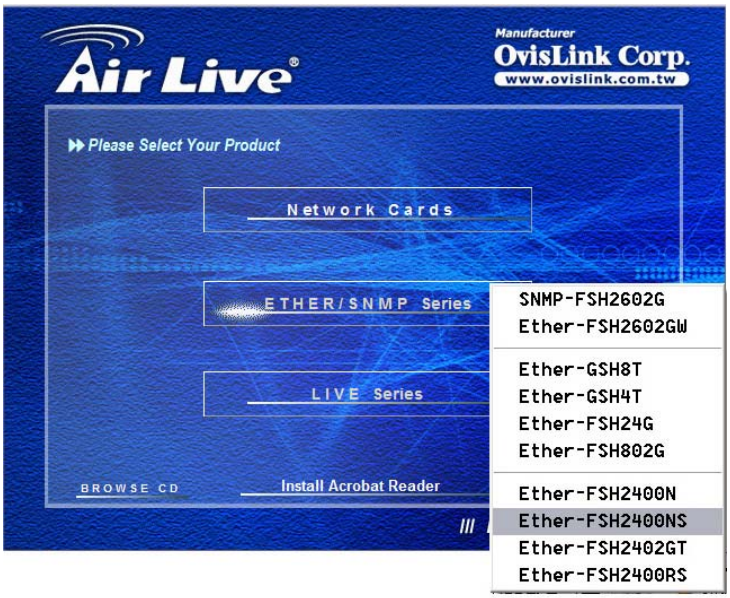
- Windows® 98 SE, Win2000, or WinXP
- WinPCap 3.1 (included in the CD)

Installing the Software

Please follow the procedures below to install the management program into your Windows

1. Insert the Airlive CD into your computer, the Product CD menu should show up automatically. If not, on the File Explorer, please click on "setup.exe" to begin.

2. Click on "ETHER/SNMP Series" and select the "Ether-FSH2400NS"



3. Follow the instruction on screen to install the "WinPCap". You only have to install it once. If you installed WinPCAP 3.0 before, please remove it. Then install the one that is included on the CD.

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You must install the WinPcap program before running the Management Software. You only need to install it once. You may also copy the utility to your computer from the MANUAL directory (filename: AirLiveRRCP.exe).
Install WinPcap
Run Management Software
Read User's Guide
BROWSE CD
BACK
EXIT
Ether-FSH2400NS
Driver & Manual CD

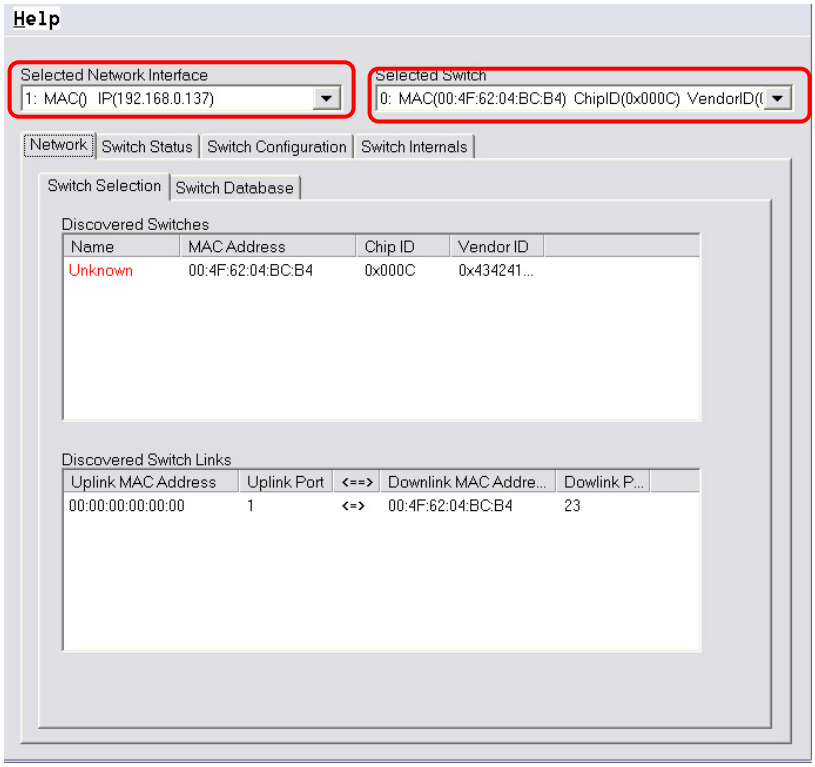
4. After this you can click on the "Management Utility" on the CD to start the management software.

Starting the Software

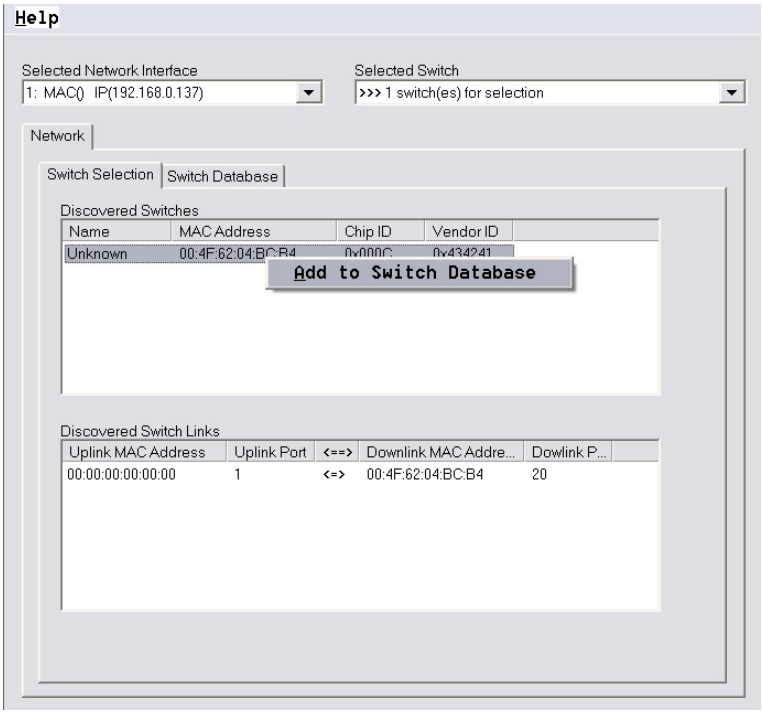
Air Live
Manufacturer
OvisLink Corp.
www.ovislink.com.tw
You must install the WinPcap program before running the Management Software. You only need to install it once. You may also copy the utility to your computer from the MANUAL directory (filename: AirLiveRRCP.exe).
Install WinPcap
Run Management Software
Read User's Guide
BROWSE CD
BACK
EXIT
Ether-FSH2400NS
Driver & Manual CD

1. To start Management Application, please click on "Run Management Software" button on the CD-ROM

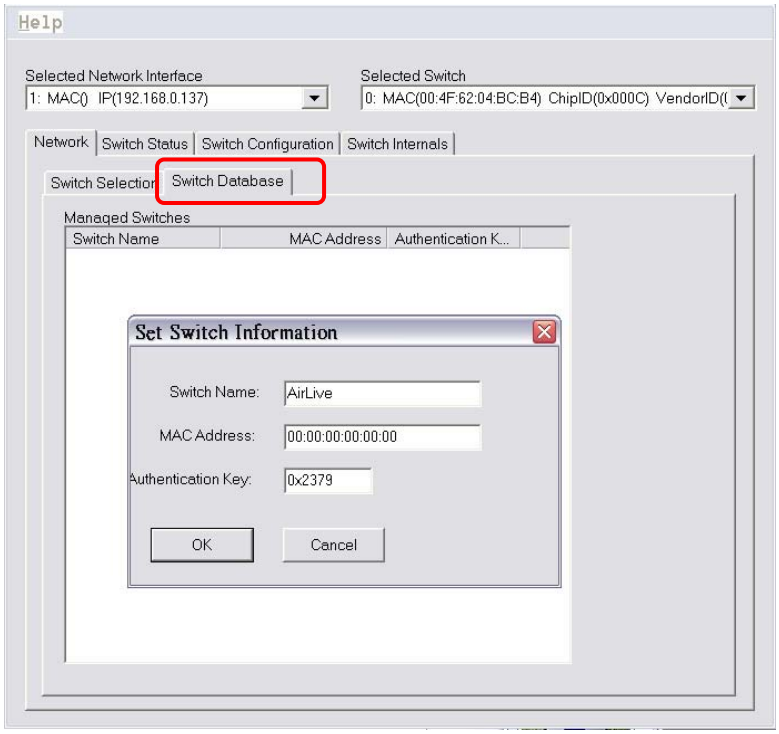
2. The follow screen will appear. Please select a network interface card (choose the one that has a IP address) ***and select a switch*** from the pull down menu. After you select, the switch configuration menu will appear. Make sure your switch is turned on before using the utility.



3. You can add the switch to the database. So you can access quickly the next time. To do so, please right click on the switch. Then select "Add to Switch Database". You can give a name to the switch ***and change the password*** during the process.



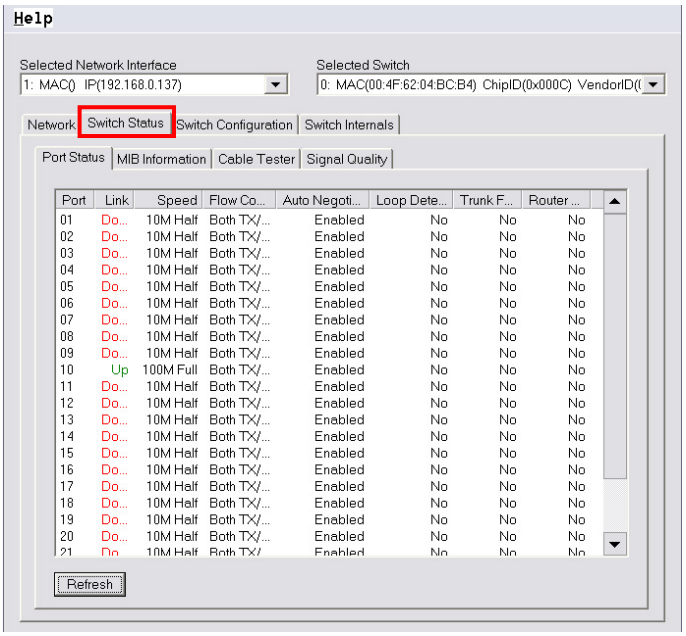
4. You can also manually enter a switch by click on the Switch Database tab. Then right click on the white area.



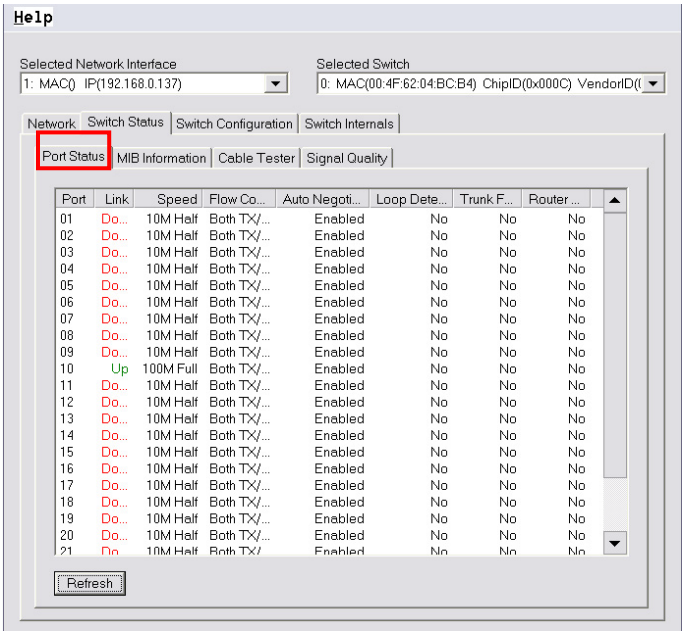
There are 4 major functions on the management screen "**Network**", "**Switch Status**", "**Switch Configuration**", and "**Switch Internals**". We will discuss them in the following sections. ***Please make sure to save to the hardware after changes.***

Switch Status Functions

Click on the Switch Status Tab of the management screen will bring you the overview, port status, and MIB counter sub menus.


Help
Selected Network Interface
1: MAC() IP(192.168.0.137)
Selected Switch
0: MAC(00:4F:62:04:BC:B4) ChipID(0x000C) VendorID(
Network
Switch Status
Switch Configuration
Switch Internals
Port Status
MIB Information
Cable Tester
Signal Quality
Port Link Speed Flow Co... Auto Negoti... Loop Dete... Trunk F... Router ...
01 Do... 10M Half Both TX/... Enabled No No No
02 Do... 10M Half Both TX/... Enabled No No No
03 Do... 10M Half Both TX/... Enabled No No No
04 Do... 10M Half Both TX/... Enabled No No No
05 Do... 10M Half Both TX/... Enabled No No No
06 Do... 10M Half Both TX/... Enabled No No No
07 Do... 10M Half Both TX/... Enabled No No No
08 Do... 10M Half Both TX/... Enabled No No No
09 Do... 10M Half Both TX/... Enabled No No No
10 Up 100M Full Both TX/... Enabled No No No
11 Do... 10M Half Both TX/... Enabled No No No
12 Do... 10M Half Both TX/... Enabled No No No
13 Do... 10M Half Both TX/... Enabled No No No
14 Do... 10M Half Both TX/... Enabled No No No
15 Do... 10M Half Both TX/... Enabled No No No
16 Do... 10M Half Both TX/... Enabled No No No
17 Do... 10M Half Both TX/... Enabled No No No
18 Do... 10M Half Both TX/... Enabled No No No
19 Do... 10M Half Both TX/... Enabled No No No
20 Do... 10M Half Both TX/... Enabled No No No
Refresh

Port Status Submenu


Help
Selected Network Interface
1: MAC() IP(192.168.0.137)
Selected Switch
0: MAC(00:4F:62:04:BC:B4) ChipID(0x000C) VendorID(
Network
Switch Status
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Port Link Speed Flow Co... Auto Negoti... Loop Dete... Trunk F... Router ...
01 Do... 10M Half Both TX/... Enabled No No No
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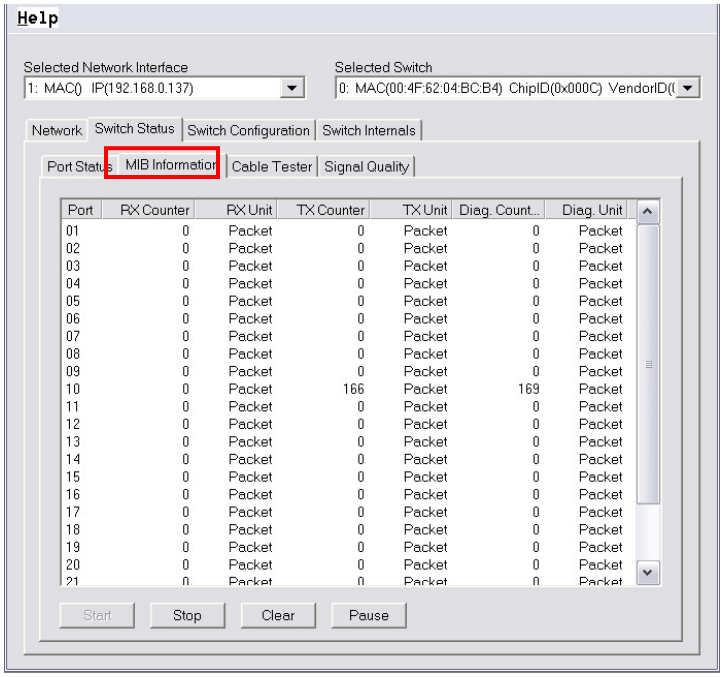
03 Do... 10M Half Both TX/... Enabled No No No
04 Do... 10M Half Both TX/... Enabled No No No
05 Do... 10M Half Both TX/... Enabled No No No
06 Do... 10M Half Both TX/... Enabled No No No
07 Do... 10M Half Both TX/... Enabled No No No
08 Do... 10M Half Both TX/... Enabled No No No
09 Do... 10M Half Both TX/... Enabled No No No
10 Up 100M Full Both TX/... Enabled No No No
11 Do... 10M Half Both TX/... Enabled No No No
12 Do... 10M Half Both TX/... Enabled No No No
13 Do... 10M Half Both TX/... Enabled No No No
14 Do... 10M Half Both TX/... Enabled No No No
15 Do... 10M Half Both TX/... Enabled No No No
16 Do... 10M Half Both TX/... Enabled No No No
17 Do... 10M Half Both TX/... Enabled No No No
18 Do... 10M Half Both TX/... Enabled No No No
19 Do... 10M Half Both TX/... Enabled No No No
20 Do... 10M Half Both TX/... Enabled No No No
Refresh

The port status includes port type, enabled status, link status, speed duplex, flow control, loop detection, and the “Router Port” for the IGMP function.

MIB Information Submenu

The function of the MIB counter is to let users see the ongoing traffic of each port. Users can set to monitor the Transmitting (TX), Receiving (RX), and diagnostic packets separately. Furthermore, you can even choose to monitor all packets or just collision/error packets. Please remember to right click each port to change units.


Help
Selected Network Interface
1: MAC() IP(192.168.0.137)
Selected Switch
0: MAC(00:4F:62:04:BC:B4) ChipID(0x000C) VendorID(
Network
Switch Status
Switch Configuration
Switch Internals
Port Status
MIB Information
Cable Tester
Signal Quality
Port RX Counter RX Unit TX Counter TX Unit Diag. Count... Diag. Unit
01 0 Packet 0 Packet 0 Packet
02 0 Packet 0 Packet 0 Packet
03 0 Packet 0 Packet 0 Packet
04 0 Packet 0 Packet 0 Packet
05 0 Packet 0 Packet 0 Packet
06 0 Packet 0 Packet 0 Packet
07 0 Packet 0 Packet 0 Packet
08 0 Packet 0 Packet 0 Packet
09 0 Packet 0 Packet 0 Packet
10 0 Packet 166 Packet 169 Packet
11 0 Packet 0 Packet 0 Packet
12 0 Packet 0 Packet 0 Packet
13 0 Packet 0 Packet 0 Packet
14 0 Packet 0 Packet 0 Packet
15 0 Packet 0 Packet 0 Packet
16 0 Packet 0 Packet 0 Packet
17 0 Packet 0 Packet 0 Packet
18 0 Packet 0 Packet 0 Packet
19 0 Packet 0 Packet 0 Packet
20 0 Packet 0 Packet 0 Packet
Start
Stop
Clear
Pause

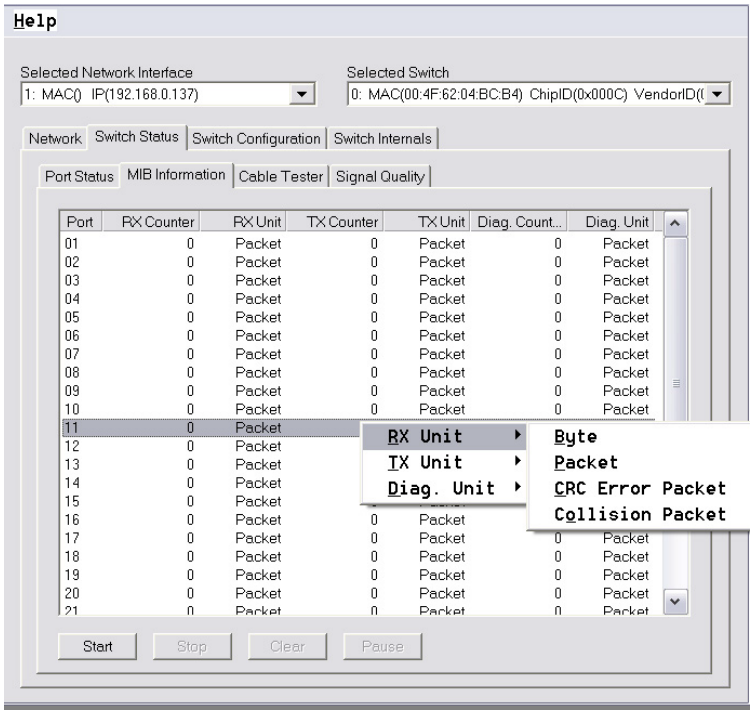
Start
Press this button to start counting packets

Stop
Press this button to stop Byte count

Clear
To clear the current content

Pause
Pause to see the current result.

To Change the Unit or Packet Type. Please right click on any of the ports and make your selection below:



Byte: The unit display is in number of bytes

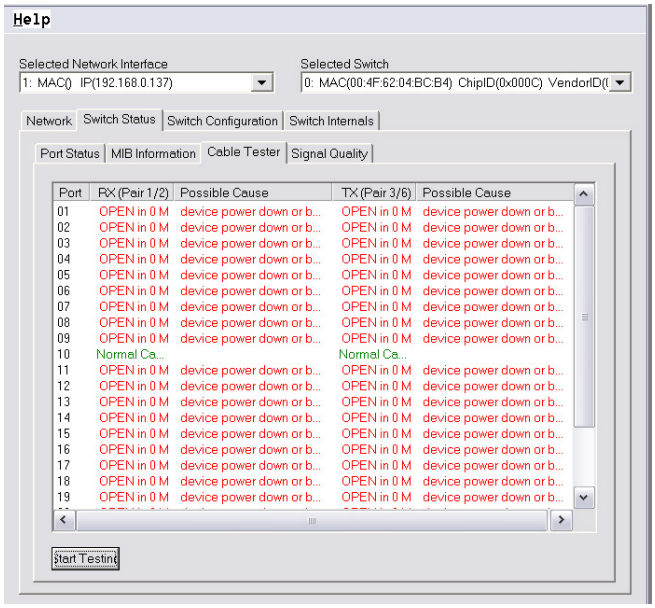
Packet: The unit display is in number of packets

CRC Error Packet: The MIB information show the number of CRC Error

Collision Packet: The MIB information show the number Collision Packet.

Cable Tester

The "cable tester" function tests the quality of the cable and whether the cable length has exceed the limit that can be handled by the switch. Please make sure at least one of the port is connected correctly.

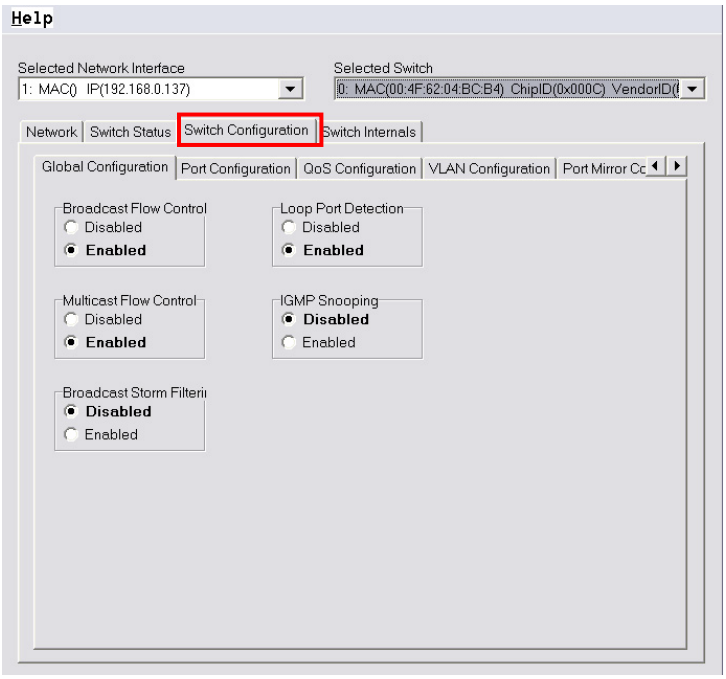


Signal Quality

This test whether the electrical signal on each port is good or bad.

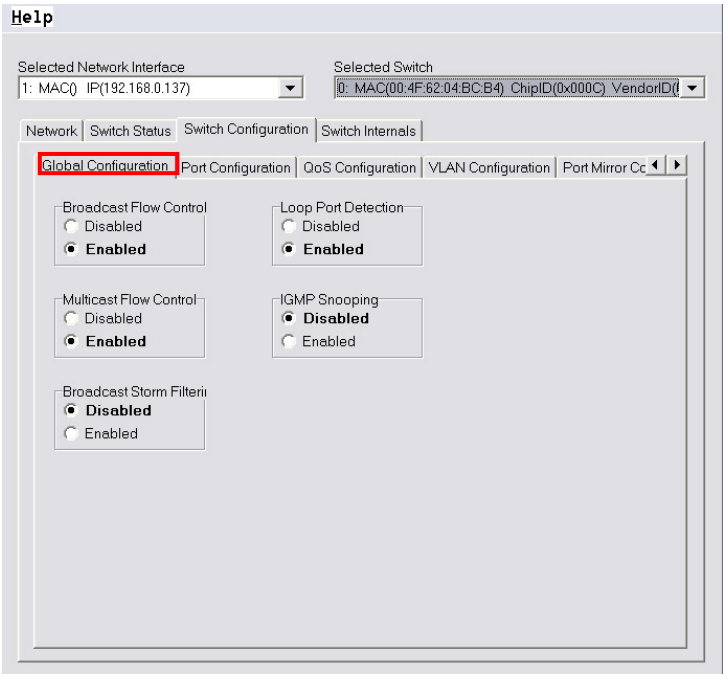
Switch Configuration

Choose the Switch Configuration menu will bring various configuration submenus for the switch.



Global Configuration Submenu

Global Configuration is used to configure the global port control registers. Press the Refresh button to read the status of the registers. Press the Update button to set the registers as shown in this frame.



Broadcast Flow
This define whether to enable flow control for the broadcast packet

Loop Port Detection
You must enable this option first before the "Loop" LED function will work. If you want to use the loop detection function, please enable this option and save settings to the switch. Once this function is enabled, the Loop LED will light up when there is a loop formed in your network.

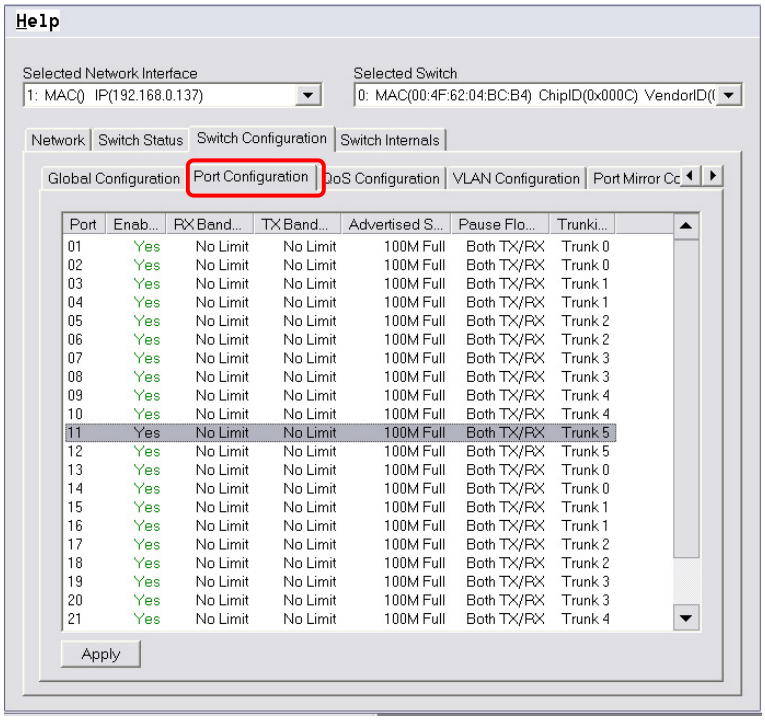
IGMP Snooping
Setting IGMP Snooping Control register and IP Multicast Router Port Discovery register. The router port is displayed in the *Switch Status -> Port Status* menu.

Broadcast Storm Filter
The Switch will filter out the broadcast packets once it exceeds 5% of total traffic. You can choose to enable or disable this option

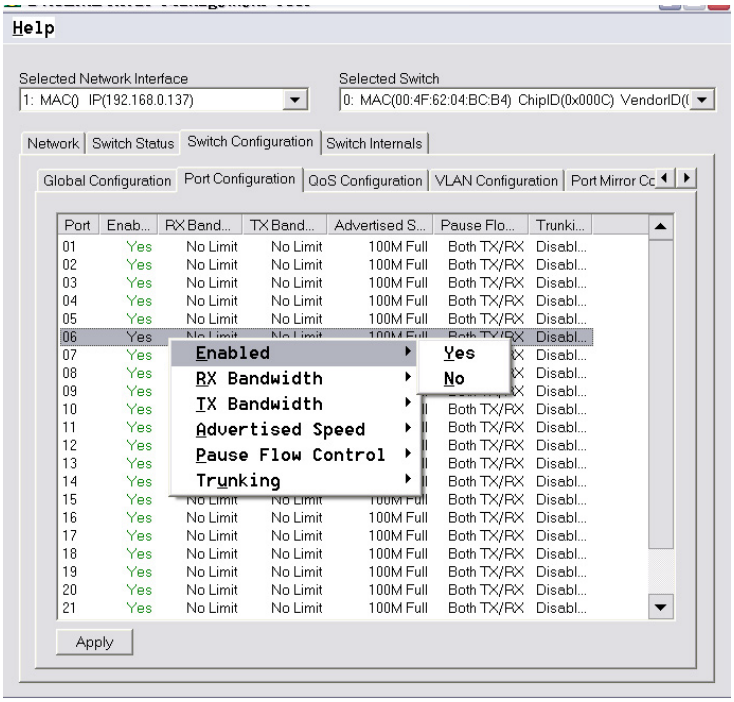
Multicast Flow Control
This define whether to enable flow control for the multi-cast packet

Port Configuration Submenu

Press the “Port Configuration” submenu, and you will see a dialog like follows. Put the check in the item you want to configure.


Help
Selected Network Interface
1: MAC() IP(192.168.0.137)
Selected Switch
0: MAC(00:4F:62:04:BC:B4) ChipID(0x000C) VendorID(
Network
Switch Status
Switch Configuration
Switch Internals
Global Configuration
Port Configuration
QoS Configuration
VLAN Configuration
Port Mirror Cc
Port Enab... RX Band... TX Band... Advertised S... Pause Flo... Trunki...
01 Yes No Limit No Limit 100M Full Both TX/RX Trunk 0
02 Yes No Limit No Limit 100M Full Both TX/RX Trunk 0
03 Yes No Limit No Limit 100M Full Both TX/RX Trunk 1
04 Yes No Limit No Limit 100M Full Both TX/RX Trunk 1
05 Yes No Limit No Limit 100M Full Both TX/RX Trunk 2
06 Yes No Limit No Limit 100M Full Both TX/RX Trunk 2
07 Yes No Limit No Limit 100M Full Both TX/RX Trunk 3
08 Yes No Limit No Limit 100M Full Both TX/RX Trunk 3
09 Yes No Limit No Limit 100M Full Both TX/RX Trunk 4
10 Yes No Limit No Limit 100M Full Both TX/RX Trunk 4
11 Yes No Limit No Limit 100M Full Both TX/RX Trunk 5
12 Yes No Limit No Limit 100M Full Both TX/RX Trunk 5
13 Yes No Limit No Limit 100M Full Both TX/RX Trunk 0
14 Yes No Limit No Limit 100M Full Both TX/RX Trunk 0
15 Yes No Limit No Limit 100M Full Both TX/RX Trunk 1
16 Yes No Limit No Limit 100M Full Both TX/RX Trunk 1
17 Yes No Limit No Limit 100M Full Both TX/RX Trunk 2
18 Yes No Limit No Limit 100M Full Both TX/RX Trunk 2
19 Yes No Limit No Limit 100M Full Both TX/RX Trunk 3
20 Yes No Limit No Limit 100M Full Both TX/RX Trunk 3
21 Yes No Limit No Limit 100M Full Both TX/RX Trunk 4
Apply

To Configure, please right click on a port. Then the following menu will appear!



Enable:
The default is to enable the port. Check the "Disable" if you want to disconnect the port

Tx Bandwidth Control
Enable this function will restrict the given port's sending speed to the selected value.

Rx Bandwidth Control
Enable this function will restrict the give port's receiving speed to the selected value

Advertised Speed
Changing the speed and duplex mode of a given port.

Pause Flow Control
Enable or Disable the pause frame from control. The default is enabled for both RX/TX. This option needs to be enabled for the Rate Control to work.

Trunking

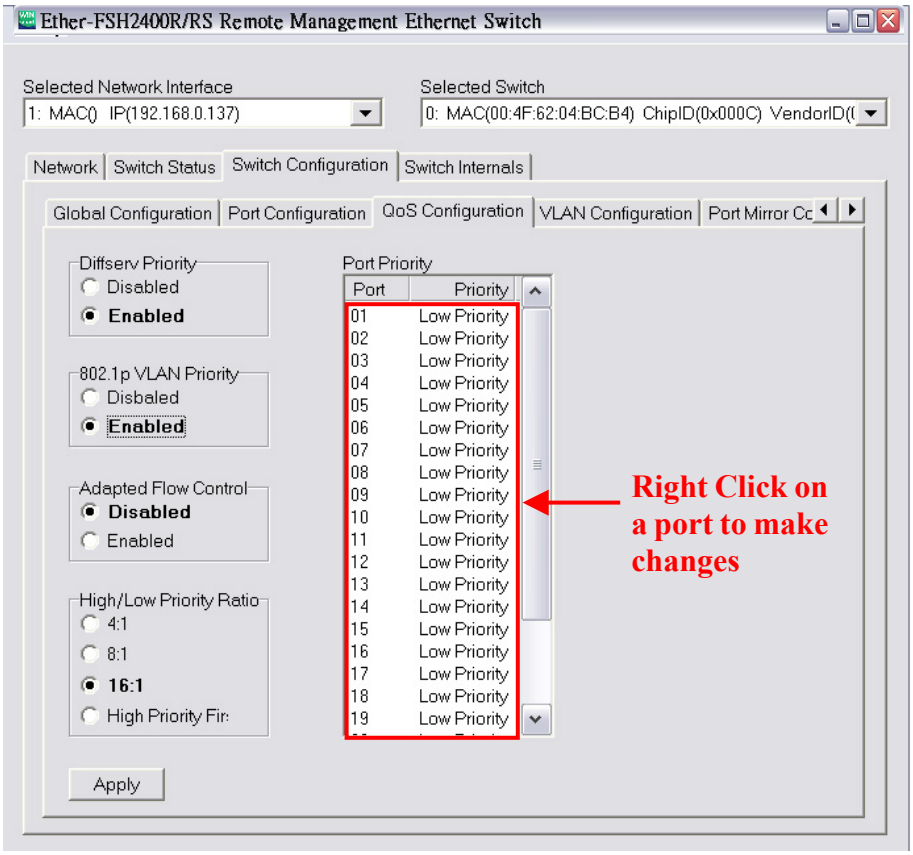
Enable the Trunking group for this particular port. Trunking combines multiple ports into one single port. The Trunk group table is as followed:

Group	Ports
Trunk 0	1, 2, 13, 14
Trunk 1	3, 4, 15, 15
Trunk 2	5, 6, 17, 18
Trunk 3	7, 8, 19, 20
Trunk 4	9, 10, 21, 22
Trunk 5	11, 12, 23, 24

Please make sure to press "Apply" after making changes.

Qos Configuration Submenu

Qos Configuration is used to configure the Qos control registers.



Port Priority
Please right click on a port to change the priority Level

Diffserv Priority
This define whether to use IP Diffserv as the basis for priority contrl

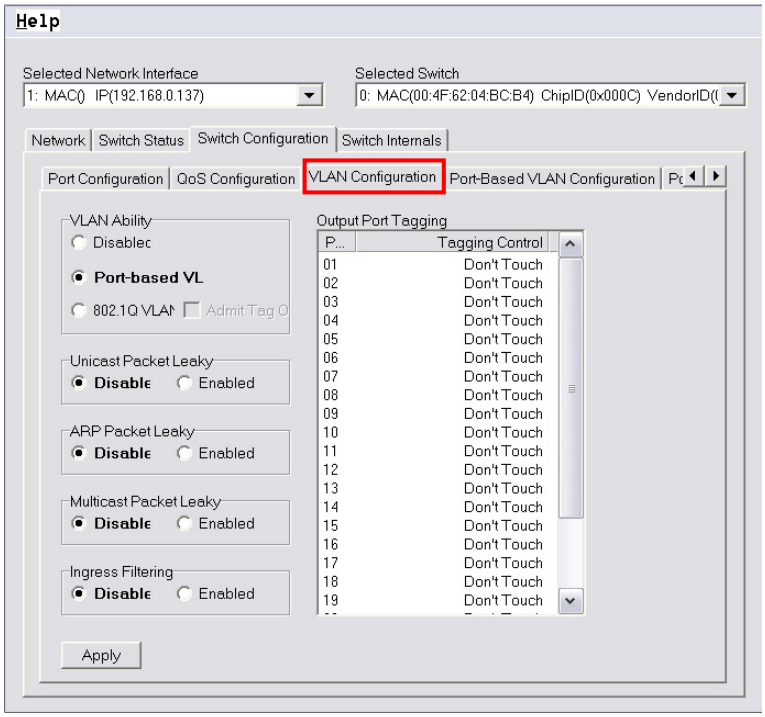
Adapter Flow Control
To disable or enable using the adapter flow control

High/Low Piority Ratio
The number of high priority packet passed, before letting a low priority packet go. For example, if the ratio is 4:1. That means for every 4 high priority traffic, 1 low priority is allowed to pass.

Please remember to press "Apply" to make changes.

VLAN Configuration Submenu

This page is used to configure the vlan table registers. **Please note that although there is 802.1Q VLAN tag option on the management software. We do not support this feature due to the register's limitation.*



VLAN Ability
Please select Port-Base VLAN. The 802.1Q VLAN is not supported.

Unicast Packet Leaky
When enabled, Uni-Cast packets are allowed to travel outside a particular VLAN

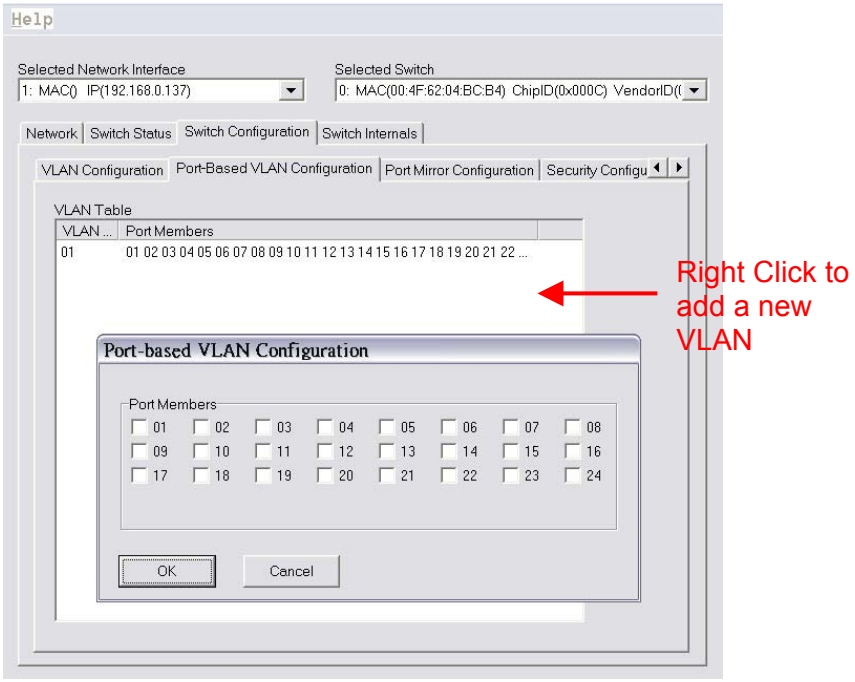
ARP Packet Leaky
When enabled, ARP packets are allowed to travel outside a particular VLAN

Multicast Packet Leaky
When enabled, Multicast packets are allowed to travel outside a particular VLAN

Ingress Filtering
This option is for 802.1Q VLAN. Therefore, it is not supported.

Port Base VLAN

Please make sure you have enabled the port based VLAN in the “VLAN configuration” submenu first.

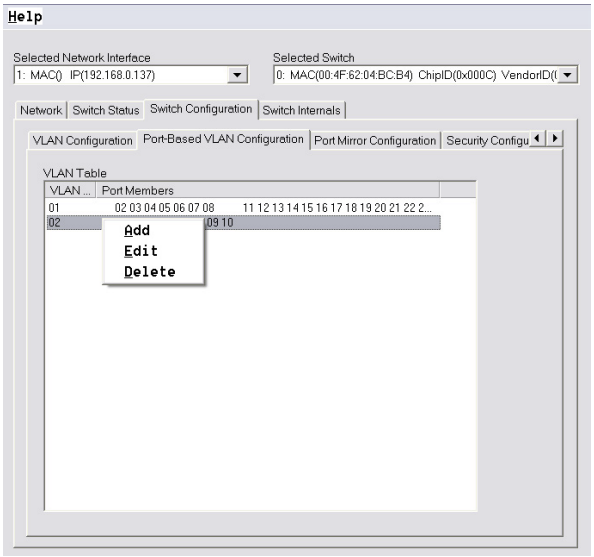


ADD A New VLAN

Please “right click” your mouse on the white area to add a new VLAN. Once you do, a new windows will pop-out asking you to select the VLAN ports.

Modify or Remove a VLAN Group

Please right click on a VLAN group you want to modify. Then the option to edit or delete a VLAN group will pop out.



Note: If a port is selected as a member port in a new VLAN group. This port will be removed from the default VLAN group 01.

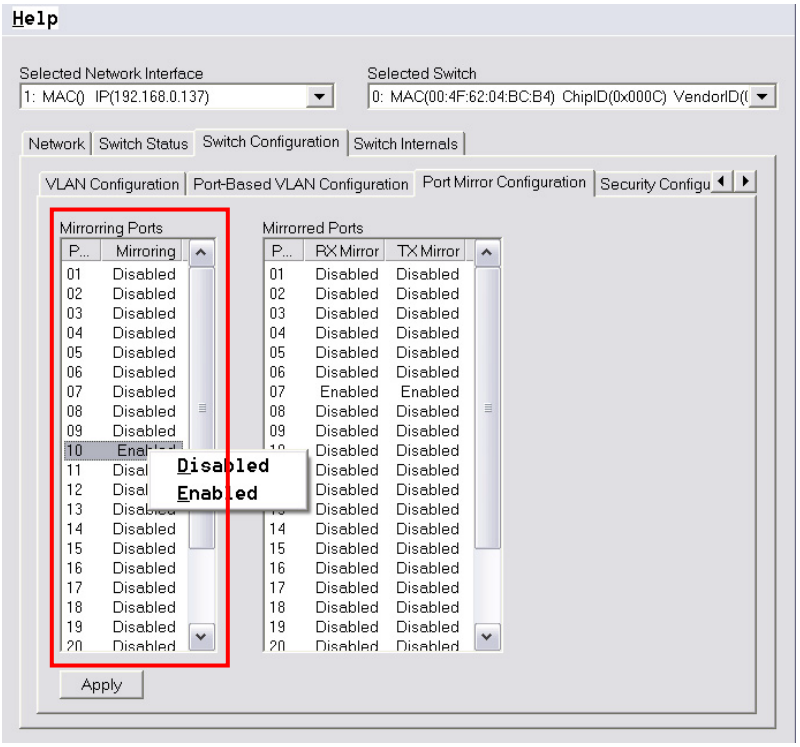
Note2: If you have mis-configured the VLAN and you can not enter into the switch's management utility. Please press the reset button on the left side of the front panel to factory reset the switch.

Port Mirror Configuration

The port mirror configuration is mainly used for diagnostic purpose. It allows the administrator to listen to the traffic of other ports. In another words, it will copy the traffic from the mirrored port to the mirroring port.

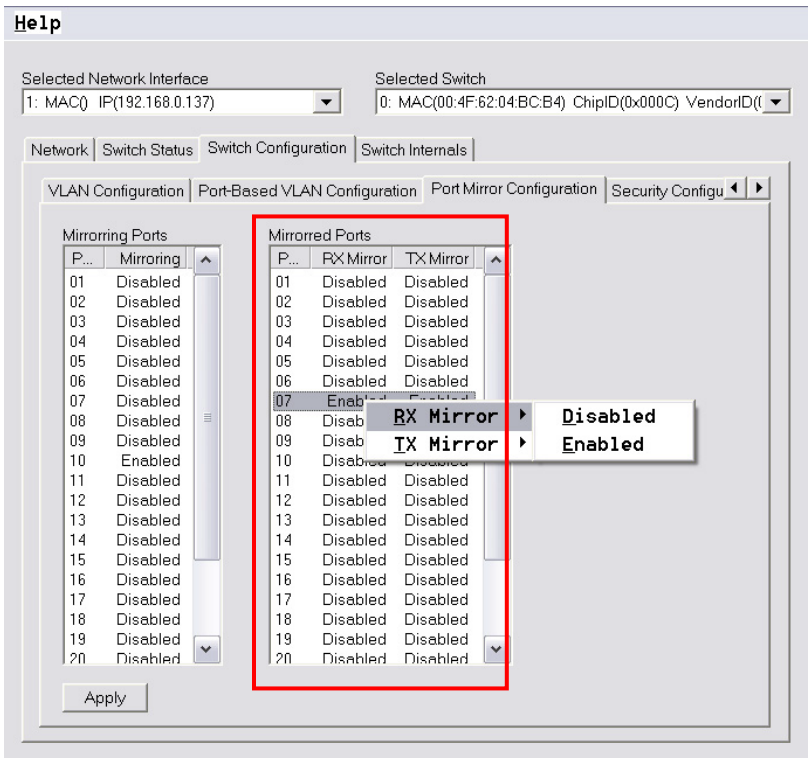
Adding a Mirroring Port

You can add a Mirroring port (Listening port) by "Right Clicking" the "Mirroring Ports" area. Please see graph below



Adding a Mirrored Port

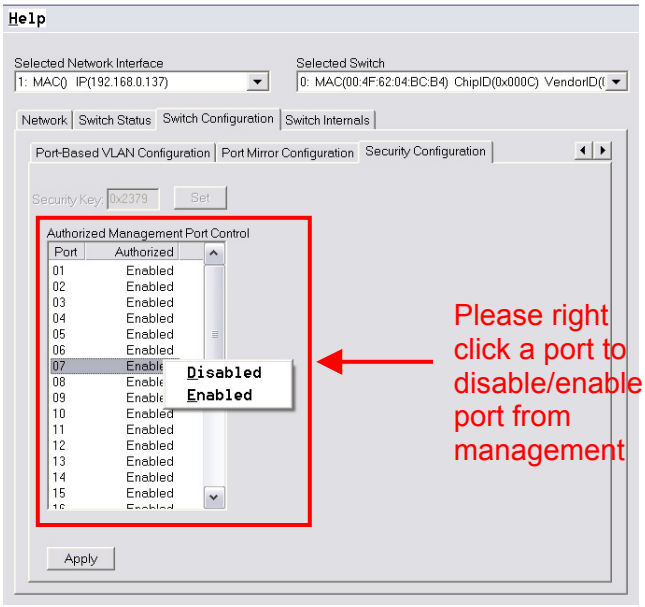
You can add a Mirrored port (Being listened) by "Right Clicking" the "Mirrored Ports" area. You can choose the RX(receiving traff) Mirror and TX(sending traffic) Mirror separately. Please see graphic below.



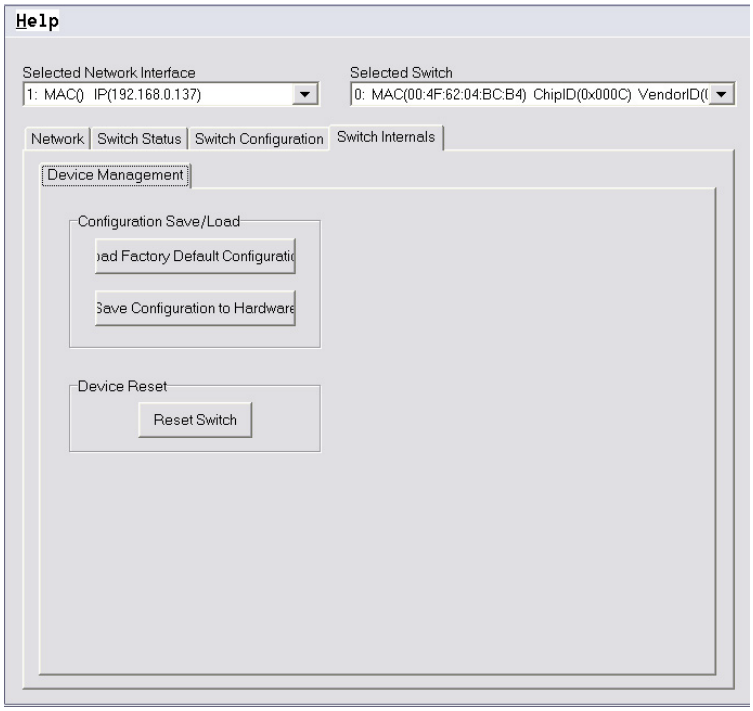
**Please remember to press Apply after making changes.*

Security Configuration

This page allow administrators to control which port can do the management function. If you want to change the administration password for the switch, please see page 17 ***Network ->Add Switch*** menu for more details.



Switch Internals



Load Factory Default Settings

Press this button to reset the configurations to factory's default settings

Save Configuration to Hardware

Press this setting to save configurations into the switch's memory. The management utility will also ask you to do so when you want to close it.

Device Reset

Press this setting to power reset the switch.

Ether-FSH2400NS Fast Ethernet Switch

Appendix A Product Specifications

- **Standard Compliance**
  - IEEE 802.3 10BASE-T Ethernet
  - IEEE 802.3u 100BASE-TX Fast Ethernet
  - IEEE 802.1q VLAN standard
  - IEEE 802.1p Class of Service
  - IEEE 802.1ad Link Aggregation
  - ANSI/IEEE Std 802.3 NWay auto-negotiation

- **Topology** Star

- **Port Configuration**
  - 24 × 10/100 BASE-TX Port
  - Auto MDI/MDI-X

- **Data Rate**
  - *10BASE-T Ethernet*
    10 Megabits/sec (half-duplex)
    20 Megabits/sec (full-duplex)
  - *100BASE-TX Fast Ethernet*
    100 Megabits/sec (half-duplex)
    200 Megabits/sec (full-duplex)

- **Trunking**: up to 7 trunk groups in 2, 4, or 8 port group

- **VLAN**
  - **Port Based**
  - **VLAN filtering rules**

- **Priority (QoS) Types**
  - *VLAN based*
  - *TCP/IP TOS*
  - *Per Port*

- **Priority Level** 2-level: High/Low

- **Transmission method** Store and Forward

- **Full Duplex** Auto-negotiation

- **Active Flow Control**
  - IEEE 802.3x compliant flow control for full duplex

- Back Pressure for half duplex

- **Filtering Address Table** 8 K per device
- **RAM Buffer** 2.5 Mbits
- **MAC Address Learning** Automatic update
- **Cabling Type**
  - 10BASE-T: 4-pair 100 ohm Category 3,4,5 UTP (100 m) cable
  - 100BASE-TX: 4-pair 100 ohm Category 5 UTP/STP (100 m) cable
- **LED layout**
  - *System LEDs*
    Power LED
    Loop LED
    Trunk LED
  - *Station port LEDs for port 1 ~ 24*
    Link/Act LEDs
    FDX/Col LEDs
    100M LEDs
- **Dimensions** 330 × 162 × 44 mm.
- **Net Weight** 1.6 kg
- **Power Input** Internal universal power supply, 100~240 V_{AC}, 50~60 Hz, 0.4A
- **Power Output** 10 Watts max, @ 100 ~ 240 V_{AC}
- **Operating Temperature** 32 ~ 122 °F / 0 ~ 50 °C
- **Storage Temperature** - 40 ~ 149°F / -40 ~ 65 °C
- **Humidity** < 95% (non-condensing)
- **Safety / EMI Certificates** UL, TUV, VDE, FCC Class A, CE

Appendix B Troubleshooting

This appendix contains specific information to help you identify and solve problems. If your switch does not function properly, please make sure it is set up according to the instructions on the manual.
If you suspect your switch is not connected correctly to your network, check the following points before you contact your local dealer for support.

- Make sure the Power is ON (Check the Power LED).
- Make sure the cable is connected properly on both ends.
- Make sure that the maximum cable length between switch and end node does not exceed 100 meters (for 10/100BASE-TX connection).
- Make sure that the maximum switch-to-hub/switch cable distance does not exceed 100 meters (for 10/100BASE-TX connection).
- Verify that the cabling type used is correct.
- Check the corresponding Link/Act, FDX/Col, 100M for signs of faulty connection. Check the status of the cable attachment. If the problem persists, try a different cable.
- Try another port on the Switch.
- Turn off power supply to the Switch. After a while, turn it on again to see if it resumes to its normal function.
- If you find out where the problem is but cannot solve it by yourself, or you simply cannot locate what is at fault, please contact your local dealer for technical support.